TANAKA et al Appl. No. 10/673,367
October 18, 2007
AMENDMENT AFTER FINAL REJECTION

## AMENDMENTS TO THE CLAIMS:

Amend the claims as follows:

1. (Currently Amended) A solar cell having an electrode coated with lead-free solder, wherein phosphorus is included in said lead-free solder, and said solder is a Sn-Ag based solder not containing Bi, said solder containing 3.5 mass% to 4.5 mass% Ag and phosphorous in an amount of 0.005 to 0.0001 mass %

said electrode being a silver electrode formed by firing silver paste, said silver paste comprising a powdery glass, said powdery glass has an average particle size of 5 μm to 20 μm.

Claim 2. (Canceled)

3. (Currently Amended) A solar cell having an electrode coated with lead-free solder, wherein phosphorus is included in said lead-free solder, wherein said lead-free solder is Sn-Bi-Ag based solder with a Bi content of greater than 5 mass % to [[89]]88 mass % and the solder has a melting point of 193-195°C and containing an amount of phosphorous in an amount of 0.005 to 0.0001 mass %.

said electrode being a silver electrode formed by firing silver paste, said silver paste comprising a powdery glass, said powdery glass has an average particle size of 5 µm to 20 µm.

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- 4. (Currently Amended) The solar cell according to claim 3 wherein the powdery glass has an average particle size of 5μm to 11μm any one of claims 1, 3, 15 and 16, wherein said electrode is a silver electrode formed by firing silver paste.
- 5. (Currently Amended) The solar cell according to claim 4, wherein the powdery glass has an average particle size of an average grain size of powdery glass included in said silver paste is 11 µm-at most.
- 6. (Currently Amended) The solar cell according to claim 4 or claim 5, wherein an amount of powdery glass included in said silver paste is 2.8 to [[10.0]] 4 mass %.
- 7. (Currently Amended) The solar cell according to claim 4 or claim 5, wherein said silver paste has an average thickness of at least 15  $\mu$ m to 20  $\mu$ m.
- 8. (Withdrawn Currently Amended) A fabrication method of a solar cell comprising the steps of printing silver paste at a partial region at a light receiving side of an anti-reflection film and at a partial region at a back side of a p type silicon substrate, firing said silver paste to form a silver electrode, and coating said silver electrode with lead-free solder including phosphorus <u>as in either claim 1 or claim 3 of any one of claims 1, 3, 15 and 16, wherein powdery glass sifted through a sieve having an opening diameter of 73 μm at most is used as said powdery glass included in said silver paste.</u>

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- 9. (Withdrawn Currently Amended) A fabrication method of a solar cell comprising the steps of printing silver paste at a partial region at a light receiving side of an anti-reflection film and at a partial region at a back side of a p type silicon substrate, firing said silver paste to form a silver electrode, and coating said silver electrode with lead-free solder including phosphorus as in either claim 1 or claim 3 according to any one of claims 1, 3, 15 and 16, wherein the step of printing silver paste includes applying silver paste at least two times.
- 10. (Withdrawn Currently Amended) A fabrication method of a solar cell comprising the steps of printing silver paste at a partial region at a light receiving side of an anti-reflection film and at a partial region at a back side of a p type silicon substrate, firing said silver paste to form a silver paste electrode, and coating said silver paste electrode with lead-free solder including phosphorus as in either claim 1 or claim 3 according to any one of claims 1, 3, 15 and 16, wherein the step of printing silver paste includes applying silver paste using a mask having a thickness of three times a wire diameter.

Claims 11-14. (Canceled)

15. (Currently Amended) The [[A]] solar cell as in one of claims 3-5 wherein the Bi content of said solder is in the range of 35 mass % to 60 mass % having an electrode coated with lead-free solder, wherein phosphorus is included in said lead-free solder,

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wherein said lead-free solder is Sn-Bi-Ag based solder with a Bi content of greater than 5 mass % to 89 mass % and a Ag content of 0.1 to 1.3 mass %.

16. (Currently Amended) The [[A]] solar cell as in one of claims 3-5 wherein the Bi content of said solder is in the range of 27 mass % to 79 mass % and said solder contains 0.1 mass % Aghaving an electrode coated with lead-free solder, wherein phosphorus is included in said lead-free solder, wherein said lead-free solder is Sn-Bi-Ag based solder with a Bi content of 27 to 79 mass %.

17. (Currently Amended) The solar cell of any one of claims 3, 15 and 16 wherein the Bi content of said solder is 35 to 60 mass %

The solar cell as in claim 6 wherein the Bi content of said solder is in the range of 27 mass % to 79 mass % and said solder contains 0.1 mass % Ag.

18. (Currently Amended) The solar cell of any one of claims 3 and 15 wherein the Bi content of said solder is 27 to 79 mass %.

The solar cell as in claim 7 wherein the Bi content of said solder is in the range of 27 mass % to 79 mass % and said solder contains 0.1 mass % Ag

19. (new) The solar cell according to claim 1 wherein the powdery glass has an average particle size of 5  $\mu m$  to 11  $\mu m$ .

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- 20. (new) The solar cell according to claim 19, wherein the powdery glass has an average particle size of 11  $\mu m$ .
- 21. (new) The solar cell according to claim 19 or claim 20, wherein an amount of powdery glass included in said silver paste is 2.8 to 4 mass %.
- 22. (new) The solar cell according to claim 19 or claim 20, wherein said silver paste has an average thickness of 15  $\mu m$  to 20  $\mu m$ .
- 23. (new) The solar cell as in claim 6 wherein the Bi content of said solder is in the range of 35 mass % to 60 mass %.
- 24. (new) The solar cell as in claim 7 wherein the Bi content of said solder is in the range of 35 mass % to 60 mass %.